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Afrotropical Asilidae (Diptera) 28. A review of the genus *Oxynoton* Janssens, 1951 and its transfer from the subfamily Trigonomiminae to the Stenopogoninae

by

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ABSTRACT

The small genus *Oxynoton* Janssens, containing only two species, *O. francoisi* Janssens and *O. arnaudi* Oldroyd, is reviewed. Distributional information for both species is increased considerably. The genus is transferred from the Trigonomiminae to the Stenopogoninae, as both species have isolated prosterna.

INTRODUCTION AND HISTORICAL BACKGROUND

At the commencement of this study only four genera were included in the Trigonomiminae – *Damalis* Fabricius, *Oligopogon* Loew, *Oxynoton* Janssens, and *Rhipidocephala* Hermann. *Damalis* was revised by Londt (1989), while *Rhipidocephala* received good treatment by Oldroyd (1966). *Oligopogon*, with its 10 described species, and *Oxynoton* with only two specific taxa were, therefore, still in need of modern revision. As I was aware of a number of unrecorded specimens of *Oxynoton*, it was decided to accumulate the material and to publish an account of this small, but interesting genus.

Oxynoton was described by Janssens (1951) for a single unusual species known on four specimens from Urundi (= Rwanda). Hull (1962) included a full description of the genus in his major revision of World asilid genera. Oldroyd (1974), in his introduction to the Asilidae of southern Africa, described a second species from northern Zimbabwe, *O. arnaudi*, basing it on a single specimen. Apart from being included in the Afrotropical catalogue (Oldroyd 1980), the genus has otherwise received only scant mention in the literature.

MATERIAL AND METHODS

Every effort was made to locate and examine all available material. Thirty-three specimens were accumulated. Museums and collections which provided specimens for study are listed below, together with the names of the people who kindly assisted me.

BMNH – The Natural History Museum, London, U.K. (J. Chainey).
CASC – California Academy of Sciences, San Francisco, U.S.A. (N. D. Penny).
ISNB – Institut Royal des Sciences Naturelles de Belgique, Brussels, Belgium (P. Grootaert).

MRAC	–	Musée Royal de l'Afrique Centrale, Tervuren, Belgium (E. De Coninck).
NMKE	–	National Museum of Kenya, Nairobi, Kenya (M. de Meyer).
NMSA	–	Natal Museum, Pietermaritzburg, South Africa.
WAAU	–	Wageningen Agricultural University, Wageningen, Netherlands (R. Zwart).

In recording label data a standard format is used, where information contained on each label is demarcated by use of single inverted commas, each line of data being separated by a slash (/). Square brackets are used to indicate additional data not found on labels.

In all instances specimens were dry-mounted on pins. Drawings of ♂ genitalia were prepared after first removing the terminal segments of the abdomen and clearing them in hot potassium hydroxide. Genitalia so treated were stored temporarily in small plastic vials containing a mixture of ethanol and glycerine, until completion of the study. They were then sealed in polyethylene tubes containing a mixture of glycerine and ethanol, and attached to the specimen pins.

Terminology follows McAlpine (1981).

Oxynoton Janssens, 1951

Oxynoton Janssens, 1951: 2. Type-species: *Oxynoton francoisi* Janssens, 1951, by monotypy.

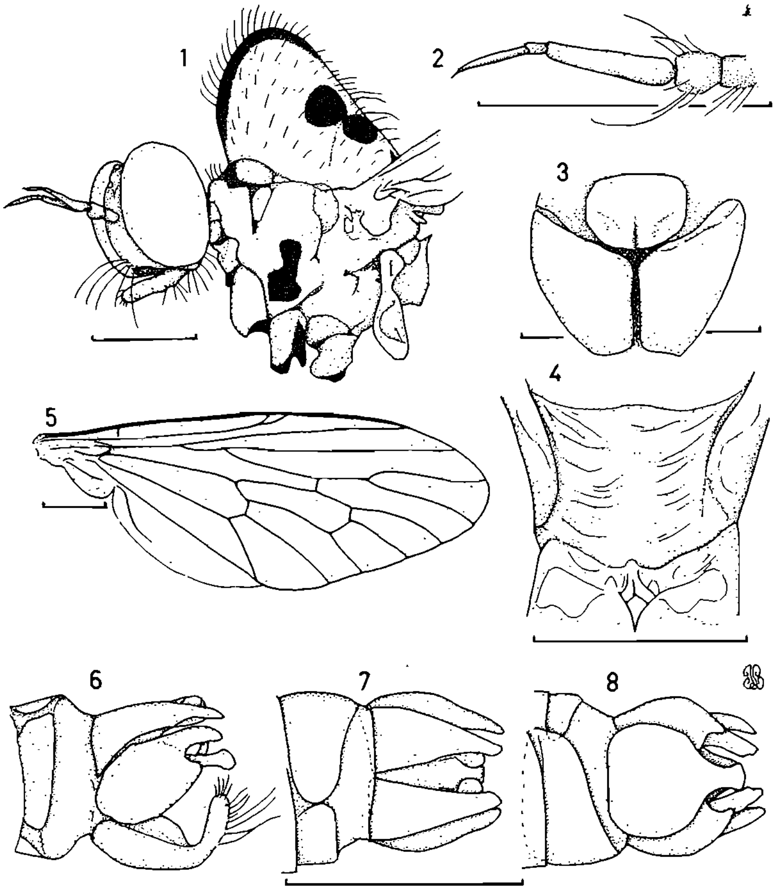
Oxynoton francoisi Janssens, 1951

Figs 1–8, 13

Oxynoton francoisi Janssens, 1951: 3 fig. (entire ♂); Hull, 1962: 68 figs 17A (antenna) 416 (wing) 846 855 (head) 1668 (♂ terminalia); Oldroyd, 1974: 169 fig. 166 (thorax); Oldroyd 1980: 371.

Redescription: Janssens (1951) records 1 ♂ type and three paratypes (1 ♂ 2 ♀), housed in the ISNB. On request, Dr Grootaert kindly sent me 1 ♂ and 1 ♀ believing these to be the only specimens available. He subsequently informed me that an additional ♂, labelled as a paratype, but bearing no locality label, had been located elsewhere in the collection. I have not studied this specimen. Unfortunately the ♂ sent to me bears a 'paratype' label and the ♀ a 'type' label. As it is unlikely that Janssens missexed the type I must assume that the specimens were mislabelled. Although I am unwilling to exchange the labels, I accept the ♂ studied by me to be the holotype, and accordingly have attached a suitable red-bordered label to its pin (without removing or swopping the original paratype label). To the ♀ , which still bears the original 'type' label, I have added a yellow-bordered paratype label. The following redescription is based on the ♂ now considered to be the holotype.

Head (Fig. 1): Dark red-brown; almost entirely silver pruinose except for occelarium and ventral parts of occiput and mouthparts which are apruinose. Setae mostly shiny white. Antennae 5-segmented (Fig. 2), flagellum spine tipped, dark red-brown with dark red-brown setae on scape and pedicel; proportional lengths of segments – 1 : 1.4 : 4.4 : 0.6 : 3.0. Width of eye : width of face ratio 1.8 : 1. Mystax composed of a single row of *ca* 14 black setae arranged along epistomal margin. Palpus 2-



Figs 1–8. *Oxynoton francoisi* Janssens. 1. Lateral aspect of head and thorax. 2. Lateral aspect of left antenna. 3. Anterior aspect of prosternum. 4. Posterior aspect of postmetacoxal area. 5. Right wing. 6–8. ♂ genitalia. 6. Lateral. 7. Dorsal. 8. Ventral. [Figs 2, 4–8 – holotype ♂; 1 & 3 – paratype ♀. Scale lines = 1 mm.]

segmented, dark red-brown, terminal setae dark red-brown. Proboscis dark red-brown, short (length about equal to depth of face plus vertex excluding occelarium), cylindrical, straight.

Thorax: Entirely dark red-brown except for mesonotum and scutellum which are orange-yellow with a pair of dark red-brown stripes anterodorsally and two pairs of dark red-brown spots posterolaterally. Setae mostly shiny yellow, but black along anterodorsal stripes. Mesonotum strikingly humped (Fig. 1). Mesonotum and scutellum slightly punctate, apruinose except for small areas at bases of wings and along suture between mesonotum and scutellum. Pleura gold-silver pruinose except for bare areas on anepisternum and katepisternum. Mesonotal macrosetae pale yellowish: 2 notopleurals, other major setae undifferentiated. Scutellum with few, small yellow marginal setae, disc asetose. Katatergite with *ca* 15 long, yellowish setae. Prosternum isolated from propleura by a membranous area (Fig. 3). Postmetacoxal area membranous (Fig. 4). Wing (Fig. 5): 5.4 x 2.1 mm, costa extends around wing margin, ending in a fusion with $CuA_2 + A_1$, anal area and alula lack bordering vein. Cells m_3 open, cup closed and joined to wing margin by a short stalk (probably end of costa). Veins dark brown, base of C, Sc and R paler yellow-white. Membrane uniformly covered with microtrichia, brownish stained, a dark brownish patch positioned between R_1 and R_{2+3} (i.e. midway along cell r_1). Halter pale yellow. Legs: Coxae and trochanters dark red-brown, remainder orange except for small dark red-brown spots at distal ends of all femora; setae mostly shiny yellow-white, although tips of tibiae and tarsomeres equipped with black setae. Claws black with narrow orange-brown bases; pulvilli and arolia well developed, orange, extending just short of down-turned tips of claws. Metathoracic femur length 1.7 mm.

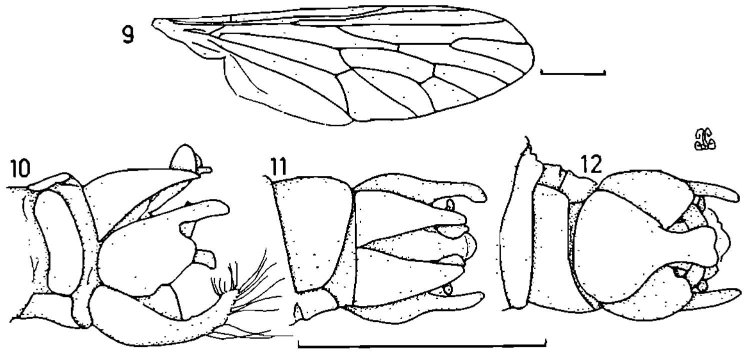
Abdomen: Terga yellowish, slightly punctate, apruinose except for small lateral patches of gold-silver pruinescence on T1–7. Sterna 1–7 yellowish, strongly gold-silver pruinose. Terminal segments entirely apruinose. Genitalia as illustrated in Figs 6–8.

Variation: Only slight individual variation and sexual dimorphism evident. ♀ specimens display slight morphological variation (particularly the Taita Hills ♀) as follows: mystax may be black; bare facial areas may be situated low on epistomal margin; anterolateral parts of mesonotal hump may be partly orange; postalar callosities may be orange-brown; metathoracic femora may be extensively brownish (i.e. $^3/_4$ of length) and possess a row of short black spine-like setae; abdominal terga may be reddish. ♂ specimens are similar to ♀ , variation seen includes: pruinescence may have a slightly golden appearance; bare facial areas usually absent; vertex may be partly silver pruinose; metathoracic femora may be extensively brownish (i.e. $^3/_4$ of length) and possess a row of short black spine-like setae; tarsi may be extensively dark red-brown; areas of abdominal tergal pruinescence may extend almost to mid-dorsal line.

Material examined:

Types: 1 ♂ **holotype**: RWANDA: 'Para- / type' [orange], 'Butetsi [Butezi 1°53'S:29°37'E] / 1200m / 27-v-50', 'F.I. / Francois', 'E. Janssens det., 1952 / *Oxynoton* / *Françoisi* / E. Janssens' (ISNB); 1 ♀ **paratype**: 'Type' [pink], 'Urundi: Butetsi (Moso) / Terr. Rutana / 27-v-1950 1250m / F. François', 'cf. Bull. Inst. / Sc. Nat. Belg. / T. XXXVII, 1952 / No 54, p. 1-4, fig.', 'E. Janssens det., 1952 / *Oxynoton* / *Françoisi* / E. Janssens' (ISNB).

Other: KENYA: 1 ♀ 'Kenya Colony / Mt[?] Kima [0°02'N:34°37'E] / 7.v.1932 / Dr E.A. Lewis', 'SW Bromley / collection / 1955' (BMNH); 1 ♂ 3 ♀ 'Kenya #60 / Nguruma, Kajiado dist / 01°50'S:36°56'E 700m / v.1990, Rift valley / Coll: I.M.I. Abu-Zinid / Alluvial plains' (NMSA); 1 ♂ 'Kenya Nairobi [1°17'S:36°49'E] / ICIPE 1994 / Abu Zinid' (WAAU). TANZANIA: 1 ♂ 'Gonja [4°16'S:38°03'E] / May 58', 'Tanganyika: / Gonja / J.D. Phipps / B.M. 1962–453' (BMNH).



Figs 9–12. *Oxynoton arnaudi* Oldroyd, Mrima Hill ♂. 9. Right wing. 10–12. ♂ genitalia. 10. Lateral. 11. Dorsal. 12. Ventral. [Scale lines = 1 mm.]

Oxynoton arnaudi Oldroyd, 1974

Figs 9–13

Oxynoton arnaudi Oldroyd, 1974: 170 fig. 167 (thorax); Oldroyd 1980: 371.

Redescription: Based on holotype ♀ as listed below. Oldroyd's original description is limited to some thirty-five words contained in a key to the two known species, and to a good illustration of the mesonotum.

Head: Dark red-brown, face and occiput (eye margins and occiput posterior of occelarium) shiny silver pruinose; vertex and rest of occiput bare. Face with pair of weakly defined apruinose spots midway between antennal bases and epistomal margin. Setae shiny silver-white. Antennae 5-segmented, flagellum spine-tipped, dark red-brown with dark red-brown setae on scape and pedicel; proportional lengths of segments – 1 : 1.2 : 4.0 : 0.6 : 4.0. Width of eye : width of face ratio 1.9 : 1. Mystax composed of a single row of *ca* 10 pale yellow-brown setae arranged along epistomal margin. Palpus 2-segmented, dark red-brown, terminal setae dark red-brown. Proboscis dark red-brown, short (length about equal to depth of face plus vertex excluding occelarium), cylindrical, straight.

Thorax: Entirely dark red-brown to black; setae shiny pale yellow-white. Mesonotum and scutellum heavily punctate, apruinose except for small areas at bases of wings and along suture between mesonotum and scutellum. Pleura silver pruinose except for bare areas on anepisternum, katepisternum and anepimeron. Mesonotal macrosetae pale yellowish: *ca* 2–3 notopleurals, *ca* 2–3 supra-alars; others, if present, poorly differentiated. Scutellum with few, small, brown-yellow marginal setae, disc asetose. Katatergite with *ca* 15 long, yellowish setae. Prosternum isolated from propleura by a membranous area. Postmetacoxal area membranous. Wing (Fig. 9): 4.8 x 1.5 mm, costa extends around wing margin, ending in a fusion with $CuA_2 + A_1$, anal area and alula lack bordering vein. Cells m_3 open, cup closed and joined to wing margin by a short stalk (probably end of costa). Veins dark brown, uniformly covered with microtrichia. Membrane brownish stained, paler distally, a dark brownish patch is positioned between R_1 and R_{2+3} (i.e. midway along cell r_1). Halter pale orange. Legs: Coxae, trochanters and proximal halves of pro- and mesothoracic femora dark red-brown, remainder orange-brown; setae mostly shiny yellow-white, although tips of tibiae and tarsomeres are equipped with black setae. Claws black with narrow orange-brown bases; pulvilli and arolia well developed, orange, extending just short of down-turned tips of claws. Metathoracic femur length 1.6 mm.

Abdomen: Dark red-brown, terga strongly punctate, apruinose except for small lateral patches of silver pruinescence on T1–7. Sterna 1–7 strongly silver pruinose with midventral apruinose areas. Terminal segments entirely apruinose. Setae shiny yellow-white. Acanthophorites well developed.

Variation: Only slight individual variation and sexual dimorphism evident. Other ♀ specimens display slight morphological variation (particularly the Taita Hills ♀) as follows: mystax may be black; bare facial areas may be situated low on epistomal margin; anterolateral parts of mesonotal hump may be partly orange; postalar callosities may be orange-brown; metathoracic femora may be extensively brownish (i.e. ¾ of length) and possess a row of short black spine-like setae; abdominal terga may be reddish. ♂ specimens are similar to ♀ , variation seen includes: pruinescence may have a slightly golden appearance; bare facial areas usually absent; vertex may be partly silver pruinose; metathoracic femora may be extensively brownish (i.e. ¾ of length) and possess a row of short black spine-like setae; tarsi may be extensively dark red-brown; areas of abdominal tergal pruinescence may extend almost to middorsal line. ♂ genitalia are as illustrated in Figs 10–12.

Material examined:

Type: 1 ♀ **holotype**: 'S. Rhodesia: / 2 mi NW. of / Balla Balla [20°27'S:29°03'E] / III-22-58, 1100m', 'E.S. Ross & / R.E. Leech / collectors', '*Oxynoton* ♀ / *arnaudi* sp. n. / det. H. Oldroyd 1973 / Holotype', 'Collection of the / California Academy / of Sciences, San / Francisco, Calif.' (CASC).

Other: CHAD: 1 ♂ 'Coll. Mus. Congo / Tchad: N' Gouri [*ca* 19°N:19°E], distr. de / Kanem IX-1958 / P. Renaud' (MRAC). KENYA: 2 ♂ 'Mrima Hill [4°29'S:39°16'E] / South Coast / Kenya / 29 Dec. 1972 / I. Bampton', '*Oxynoton* / *arnaudi* Oldroyd / Det. JGH Londt '79' (NMSA); 1 ♂ 'Kwale Forest [? = Mrima Forest] / Kenya / 28 Dec. 1972 / I. Bampton' (NMSA); 1 ♂ 'Kenya / Voi [3°23'S:38°34'E], Rt. A109 / 4–6.v.1991 / A. Freidberg / & Fini Kaplan' (NMSA); 1 ♂ 'Kenya: Kwale Distr. / Diani Beach [4°18'S:39°35'E]. Sea / level. 4.I.1970 / M.E. Irwin & / E.S. Ross' (CASC); 1 ♂ 'Kenya: Archer's Post [0°39N:37°41'E] / Uasi Nyiro river. / 2300' 12-XII-1969 / M.E. Irwin & / E.S. Ross' (CASC); 10 ♂ 'Kenya / Kwale District / Mrima Forest [4°29'S:39°16'E] / 2–6 Feb. 1989 / J. Mukangani' (NMKE); 1 ♀ 'Kenya / Taita Hills [3°25'S:38°20'E] Exp / Msau Valley / 18.5.85 / J. Mukangani' (NMKE). TANZANIA: 1 ♀ 'NE Kondoa [4°54'S:35°46'E] / May 55', 'Tanganyika / Lamerton', '*Oxynoton* / *françoisi* Janssens / det. H. Oldroyd. 1957' (BMNH). ZAÏRE: 1 ♂ 'Lualaba R. [0°26'N:25°20'E] / 27.5.07 / 2,550–4,000 ft', 'Neave Coll. / 1907-230' (BMNH); 1 ♀ 'Lualaba R. / 12.5.07 / 2,550–4,000 ft', 'Neave Coll. / 1907-230' (BMNH). ZAMBIA: 1 ♂ 1 ♀ 'N. Rhodesia: / 24 mi. N. of / Livingstone [17°51'S:25°52'E] / III-5-58, 1180m', 'E.S. Ross & / R.E. Leech / collectors', '*Oxynoton* / *arnaudi* Old. / or nr. / det. E.M. Fisher '76' (CASC).

DISCUSSION

In describing the form of the prosternum – an important character used in the definition of subfamilies – Hull (1962) wrote 'The propleuron is united to the prosternum behind', and it was probably this information, coupled with the fact that

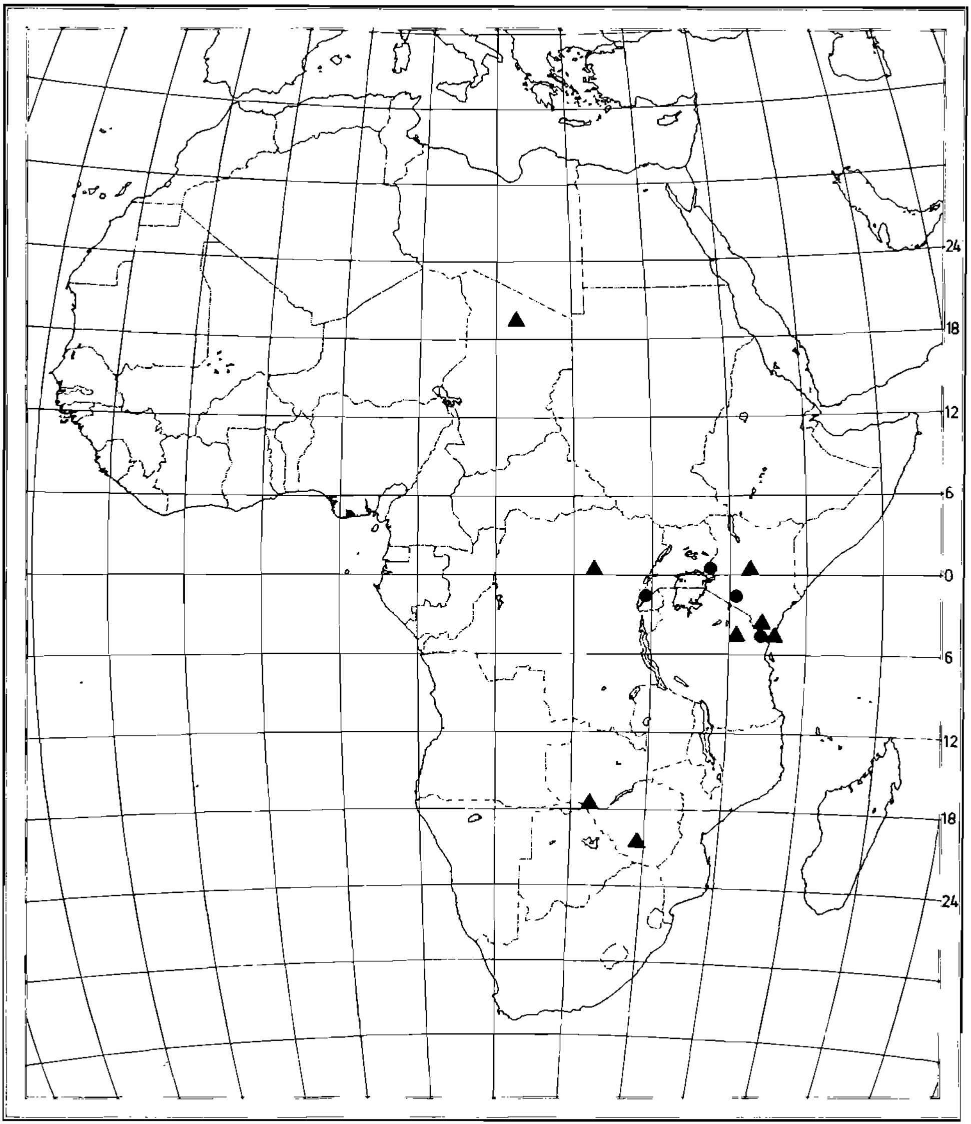


Fig. 13. The distribution of *Oxynoton* species. ● = *O. francoisi*; ▲ = *O. arnaudi*.

species of *Oxynoton* resemble those of *Damalis*, that caused him to place *Oxynoton* in the tribe Damalini (now included in the subfamily Trigonomiminae). Oldroyd (1974) clearly concurred when he compared the genus to others now included in the Trigonomiminae by stating that *Oxynoton* has 'the general appearance of a *Xenomyza* [now = *Damalis* – see Londt 1989], but with the antennae of *Rhipidocephala*, and acanthophorites of *Oligopogon*'. Oldroyd (1980) went on to catalogue the genus with these genera, and *Icariomima* Enderlein (now = *Damalis* – see Londt 1989), in the tribe Xenomyzini (now included in the subfamily Trigonomiminae). It was therefore surprising to discover that the prosternum is isolated from the propleura by a membranous region (Fig. 3). The consequence of this discovery is that *Oxynoton* must now be referred to the Stenopogoninae. This action is fully supported by other morphological information, in particular the possession of acanthophorites, and the lack of a postmetacoxal bridge, but also the general form of the wing venation and male genitalia.

Oxynoton shares all the main features used to characterise *Afroholopogon* Londt (1994*a*) – i.e. the anatergites are bare; the anal lobe and alula are not bordered by the costa; the pulvilli are well developed and the postmetacoxal bridge is absent. The genus will key out perfectly to *Afroholopogon* in my key to the Afrotropical genera of Stenopogoninae (Londt 1994*b*). *Oxynoton* is, however, immediately recognisable on account of the somewhat bizarre condition of the mesonotum, a character state not found in other Afrotropical Stenopogoninae. Londt's (1994*b*) key needs only slight modification to accommodate *Oxynoton*. Couplet 12 should be adjusted as follows:

12 Postmetacoxal bridge present .... **Rhabdogaster** Loew
– Postmetacoxal bridge absent 12a
12a Mesonotum greatly elevated anterodorsally and hump-like .... **Oxynoton** Janssens
– Mesonotum not hump-like, but of a more usual form .... **Afroholopogon** Londt

My present inability to identify an autapomorphy for *Afroholopogon* would suggest that it should be united with *Oxynoton*. This I am reluctant to do before a complete review of *Afroholopogon* has been undertaken. While it must be conceded that the present classification of these genera is unnatural (a situation fairly common in large groups of organisms – like the Asilidae – which have not been adequately subjected to modern cladistic analysis), it remains convenient and useful. The fact that the two species of *Oxynoton* are easily differentiated from species of *Afroholopogon* is therefore used to justify the retention of the generic concepts until more evidence is available to support an alternative interpretation.

The distributional patterns of *Oxynoton* and *Afroholopogon* are somewhat different. Whereas *Afroholopogon* is primarily a southern African group (Londt 1994*a*) the distribution of *Oxynoton* is centred on East and Central Africa (Fig. 13). There is, however, some overlap in that species of both genera are known from Tanzania and Zimbabwe.

Oldroyd's (1974) key to the species of *Oxynoton* serves adequately for their separation (although there is some colour variation which could not have been taken into account when the key was written). The shape of the mesonotum is clearly diagnostic, as is wing shape. Although there is a range in size within both species, *O. francoisi* is generally larger than *O. arnaudi*. In addition, *O. arnaudi* is clearly darker and more punctate than *O. francoisi*. Male genitalia are very similar and not of obvious diagnostic value, although the epandrial lobes of *O. francoisi* appear to be generally longer (they project distally to the same level as the gonocoxites) than those of *O. arnaudi* (lobes are shorter than gonocoxites – compare Figs 6 & 10).

Notwithstanding the limited sample size, adult seasonal data are interesting. All specimens of *O. francoisi* have been collected in May, suggesting a limited period of adult activity, while *O. arnaudi*, whose distribution straddles the equator, appears to be active over a far greater period of the year. The fact that specimens from non-equatorial countries (i.e. Zimbabwe, Zambia and Chad) were collected in late summer may suggest that the genus inhabits grassland situations and behaves much like species of *Damalis*. This suggestion could account for the convergence which has led to the misplacement of *Oxynoton* within the Trigonomiminae.

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